Patent claims

1. A method for operating an image system (10) of an imaging medical examination device (1), the image system (10) having a reception unit (11) for receiving a plurality of signals arising at different locations, and a display unit (19) for the imaging representation of pixels, the pixels each being assigned at least one signal, characterized in that
an event of the undisturbed operation of the medical examination device (1) automatically triggers a defect determination (63) for determining a defective pixel possibly present in the image.

2. The method as claimed in claim 1, characterized in that
the triggering event is derived from an operating process which does not serve for the defect determination (63), in particular from an operator's control process which does not serve for the defect determination (63).

3. The method as claimed in claim 1 or 2, characterized in that
the triggering event is derived from a switch-on process performed on the medical examination device (1).

4. The method as claimed in one of claims 1 to 3, characterized in that
the triggering event is derived from a calibration process performed on the medical examination device (1).

5. The method as claimed in one of claims 1 to 4, characterized in that

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the triggering event is generated at a defined point in time before, during or after an image acquisition procedure, in particular before, during or after a patient examination or a scan.

6. The method as claimed in one of claims 1 to 5, characterized in that
the triggering event is generated by a counting process.

7. The method as claimed in claim 6, characterized in that
the counting process counts a process which is repeated during operation of the medical examination device (1), in particular a switch-on process, a calibration process and/or examination process.

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8. The method as claimed in one of claims 1 to 7, characterized in that
the triggering event is generated by a time measuring process.

9. The method as claimed in one of claims 1 to 8, characterized in that
after the defect determination (63), a correction process (67) is automatically triggered if a defective pixel was detected.

10. The method as claimed in claim 9, characterized in that
during the correction process (67), the assignment of the defective pixel to its signal is canceled and, instead of this, the pixel is assigned one or more signals of one or more other pixels.

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11. The method as claimed in claim 9 or 10,

characterized in that
in connection with the defect determination after carrying out a first correction process in which already known image defects are corrected, the corrected image is analyzed in order to determine further defects or defects that are still present, which are corrected in a second correction process.

12. The method as claimed in claim 11, characterized in that
the image is filtered after the first correction process, after which the filtered image is analyzed.

13. The method as claimed in claim 12, characterized in that
a median filter or a high-pass filter is used as the filter.

14. The method as claimed in one of claims 11 to 13, characterized in that
in the context of the analysis, the pixel-related signals are compared with one or more threshold values.

15. The method as claimed in one of claims 11 to 14, characterized in that
the analysis result is used to generate a new defect map (53), which describes the detected defect or defects that is or are new or still present, and which is used to effect the correction in the second correction process.

16. The method as claimed in one of claims 11 to 15, characterized in that
in the context of the first correction process, the image is corrected using an old defect map

(50), which describes already known defects.

17. The method as claimed in claims 15 and 16, characterized in that the old defect map (50) is updated using the new defect map (53).

18. The method as claimed in claim 17, characterized in that the updating is effected only when one or more defects that are new or still present are detected.

19. The method as claimed in one of claims 11 to 18, characterized in that a flat-fielding correction of the image is effected in the context of the first correction process.

20. The method as claimed in one of claims 1 to 19, characterized in that after the defect determination (63), a message is automatically sent via a data link (47) to a service device (49) if a defective pixel was detected.

21. The method as claimed in one of the preceding claims, characterized in that a pixel is detected as defective if the assigned signal falls below a minimum value.

22. The method as claimed in one of the preceding claims, characterized in that a pixel is detected as defective if the noise in the assigned signal exceeds a maximum value.

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23. The method as claimed in one of the preceding claims,
characterized in that
the defect determination (63) is carried out on a stored image.

24. An imaging medical examination device (1) having an image system (10), the image system (10) having a reception unit (11) for receiving a plurality of signals arising at different locations, and a display unit (19) for the imaging representation of pixels, the pixels each being assigned at least one signal,
characterized by
a detection device (31) for automatically determining a defective pixel possibly present in the image, in which case the detection device (31) can be activated by an event of the undisturbed operation of the medical examination device (1).

25. The examination device as claimed in claim 24,
characterized in that
the detection device (31) can detect a pixel as defective if the assigned signal falls below a minimum value.

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26. The examination device as claimed in claim 24 or 25,
characterized in that
the detection device (31) can detect a pixel as defective if the noise in the assigned signal exceeds a maximum value.

27. The examination device as claimed in one of claims 24 to 26,
characterized by
a correction device (41) for automatically

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eliminating a defective pixel that has possibly been detected, in which case the correction device (41) is connected to the detection device (31) and can be activated by the latter if a defective pixel is detected.

28. The examination device as claimed in claim 27, characterized in that
the detection device (31) is designed for analysis of the image that has been corrected in the correction device (41) a first time with regard to already known defects, for the purpose of determining defects that are new or still present, and the correction device (41) is designed for renewed correction of the corrected image with regard to the defect or defects that is or are new or still present.

29. The examination device as claimed in claim 28, characterized in that
the detection device (31) has a filter for filtering the image after the first correction process and an analysis means (42) for determining one or more defects that is or are new or still present.

30. The examination device as claimed in claim 29, characterized in that
the filter is a median filter or a high-pass filter.

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31. The examination device as claimed in one of claims 28 to 30,
characterized in that
the analysis means (42) is designed for comparing the pixel-related signals with one or more threshold values for the purpose of determining a defect.

32. The examination device as claimed in one of claims 28 to 31,
characterized in that
the analysis means (42) or the detection device (31) is designed for generating a new defect map (53), which describes the detected defect or defects that is or are new or still present, and the correction device (41) is designed for correcting the image in the second correction process using the new defect map (53).

33. The examination device as claimed in one of claims 28 to 32,
characterized in that
the correction device (41) is designed for correcting the image using an old defect map (50), which describes already known defects, in the context of the first correction process.

34. The examination device as claimed in claims 32 and 33,
characterized in that
the detection device (31) or the correction device (41) is designed for updating the old defect map (50) using the new defect map (53).

35. The examination device as claimed in one of claims 28 to 34,
characterized in that
the correction device (41) is designed for carrying out a flat-fielding correction of the image in the context of the first correction process.

36. The examination device as claimed in one of claims 24 to 35,
characterized in that
the detection device (31) has a data interface

(45) for sending a message to a service device (49), in which case the message can be sent automatically by the detection device (31) if a defective pixel is detected.

37. The examination device as claimed in one of claims 24 to 36,
characterized in that
the detection device (31) is connected to an image memory (40), from which it is possible to retrieve an image which was generated by the image system (10) at an earlier point in time.